

$^{50}\text{Cr}(\alpha, n\gamma)$ 1978Ka32, 1973Sa10

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huo Junde	NDS 110,2689 (2009)	31-Mar-2007

1978Ka32: E=8.08 MeV, γ , $\gamma(\theta)$ DSAM, $\gamma\gamma$, linear polarization.
 1976Ma61: E=6.4-11 MeV, γ , $\gamma\gamma$, $\gamma(\theta)$.
 1974En04: E=10 MeV, $\gamma(\theta)$ RDM.
 1973Sa10: E=14.2 MeV, γ , $\gamma\gamma$, $\gamma(\theta)$ DSAM, linear polarization.
 1974So07: E=10 MeV, γ , ce.
 1971Co29: E=5.6-10 MeV, γ , $\gamma(\theta)$.
 1973Ne18: E=7.5-10.5 MeV, γ , $\gamma(\theta)$ DSAM.

 ^{53}Fe Levels

E(level)	J^π ‡	$T_{1/2}$ †	Comments
0.0	$7/2^-$		
741.11 10	$3/2^-$	63.5 ns 14	$T_{1/2}$: from 1971Co29. Other: 63.8 ns 28 (1976Ma61).
774.42 11	$1/2^-$	2.0 ns 2	$T_{1/2}$: from 1976Ma61.
1328.2 3	$9/2^-$	17 fs 7	
1423.5 3	$5/2^-$	2.8 ps 7	$T_{1/2}$: from 1974En04.
1696.32 18	$7/2^-$	1.4 ps +2I-7	$T_{1/2}$: from 1978Ka32.
2042.64 10	$3/2^-$	0.24 ps 5	
2339.4 4	$11/2^-$	53 fs 12	
2479? 2		35 fs 8	
2829.0 20		35 fs 14	
2844.8? 20		33 fs 12	
2966.9 20	$1/2^+$	78 fs 15	
3040.4 11	$19/2^-$		
3176.1 6	$13/2^-$	<132 fs	$T_{1/2}$: from 1973Sa10.
3462.9 7	$15/2^-$		
4813? 3			

† From 1973Ne18 by DSAM, except as noted.

‡ From $\gamma(\theta)$ and linear polarization data (1973Sa10).

 $\gamma(^{53}\text{Fe})$

E_γ †	I_γ †	E_f (level)	J_i^π	E_f	J_f^π	Mult.&	δ †	Comments
33.31‡ 2		774.42	$1/2^-$	741.11	$3/2^-$	M1		
286.8 3	7.9	3462.9	$15/2^-$	3176.1	$13/2^-$	M1		Additional information 7.
647@	5	1423.5	$5/2^-$	774.42	$1/2^-$	E2		I_γ : from branching ratio of γ rays 647 and 682 in 1978Ka32 and I_γ of γ ray 682 in 1973Sa10.
682.6 3	19	1423.5	$5/2^-$	741.11	$3/2^-$	M1+E2	+0.36 +6-2	δ : $\delta=-0.05 +8-11$ (1978Ka32). Additional information 3. δ : from 1978Ka32.
701		3040.4	$19/2^-$	2339.4	$11/2^-$			
741.1‡ 1	92	741.11	$3/2^-$	0.0	$7/2^-$	E2		$\alpha(\text{exp})=4.3$ 6 (1974So07) Additional information 1.
836.7 4	19	3176.1	$13/2^-$	2339.4	$11/2^-$	M1		Additional information 6.
955.20‡ 15	29	1696.32	$7/2^-$	741.11	$3/2^-$	E2		Mult.: predicted linear pol= $+0.41$ to $+0.67$; exp= $+0.2$ to 1.6 (1973Sa10). Additional information 4.

Continued on next page (footnotes at end of table)

$^{50}\text{Cr}(\alpha, n\gamma)$ **1978Ka32, 1973Sa10 (continued)** $\gamma(^{53}\text{Fe})$ (continued)

E_γ^\dagger	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. &	δ^\dagger	Comments
1011.2 2	46	2339.4	11/2 ⁻	1328.2	9/2 ⁻	M1(+E2)	-0.11 2	Additional information 5.
1328.2 3	100	1328.2	9/2 ⁻	0.0	7/2 ⁻	M1+E2	-0.11 2	Additional information 2.
1350 ^a 2		4813?		3462.9	15/2 ⁻			E_γ : observed only in $\gamma\gamma$ -coin (1973Sa10).
1695 ^{@a}	<1.5	1696.32	7/2 ⁻	0.0	7/2 ⁻	M1		
1738 ^{#a} 1		2479?		741.11	3/2 ⁻	D,E2		
2042.6 1		2042.64	3/2 ⁻	0.0	7/2 ⁻	E2		
2225.7 20		2966.9	1/2 ⁺	741.11	3/2 ⁻	E1		
2828.9 20		2829.0		0.0	7/2 ⁻	D,E2		
2844.7 20		2844.8?		0.0	7/2 ⁻	D,E2		

[†] From [1973Sa10](#), except as noted.

[‡] From [1976Ma61](#).

[#] From [1973Ne18](#).

[@] From [1978Ka32](#).

& From $\gamma(\theta)$ and comparison to RUL, except as noted.

^a Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme

Intensities: Relative I_γ

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - γ Decay (Uncertain)

